SUPPORT FOR THE AMENDMENT

This Amendment cancels Claims 2-3; and amends Claim 1. Support for the amendments is found in the specification and claims as originally filed. In particular, support for Claim 1 is found in canceled Claim 2. No new matter would be introduced by entry of these amendments.

Upon entry of these amendments, Claims 1 and 4-18 will be pending in this application. Claim 1 is independent. Claims 6-18 are withdrawn from consideration pursuant to a Restriction Requirement.

REQUEST FOR RECONSIDERATION

Applicants respectfully request entry of the foregoing and reexamination and reconsideration of the application, as amended, in light of the remarks that follow.

Conventionally, the surface of untreated silicon dioxide powder produced by flame hydrolysis displays a hydroxyl group density of approximately 1.8 to 2.5 OH/nm^2. Even if additional water vapor is charged into the process, the hydroxyl group density remains within this range. Specification at page 3, lines 9-16.

The present invention provides a silicon dioxide powder that can be incorporated into aqueous dispersions with high fill contents. Specification at page 2, lines 21-23. The silicon dioxide powder is produced by flame hydrolysis and displays a hydroxyl group density, higher than is conventional, of 3 to 4.7 OH/nm^2. Specification at page 2, lines 29-32; page 4, lines 30-31. The hydroxyl group density is determined by reaction of the silicon dioxide powder with lithium aluminum hydride according to the method of J. Mathias and G. Wannemacher in Journal of Colloid and Interface Science 125 (1988) 61 ("Mathias/Wannemacher").

Claims 1 and 4-5 are rejected under 35 U.S.C. §102(b) over U.S. Patent No. 5,623,028 ("Fitzgerald"). Claims 2-3 are rejected under 35 U.S.C. §103(a) over Fitzgerald in view of U.S. Patent No. 6,328,944 ("Mangold-944") and U.S. Patent No. 6,423,331 ("Mangold-331").

Applicants respectfully request that the Examiner cite U.S. Patent No. 5,623,028 ("Fitzgerald"); U.S. Patent No. 6,328,944 ("Mangold-944"); and U.S. Patent No. 6,423,331 ("Mangold-331") on a Form PTO-892.

Fitzgerald discloses that control of the surface silanol density in silica fillers used in formulating heat curable rubbers enables control of the percent sealing force retention of the composite. Fitzgerald at abstract. Fitzgerald discloses that fumed silica filler can have a surface silanol density of "4.5 OH groups/nm". Fitzgerald at column 11, lines 52-54. Fitzgerald discloses that the silanol density was determined by "nitrogeneous base chemisorption" and/or "magic angle spinning solid state nmr". Fitzgerald at column 8, lines 24-25; column 9, lines 59-60). Fitzgerald discloses that as initially produced, fumed or pyrogenic silica particles will tend to have a maximum silanol density. Fitzgerald at column 5, lines 59-61.

In controlling the surface silanol density in silica fillers used in formulating heat curable rubbers, Fitzgerald discloses "reducing the surface concentration of hydroxyl or silanol group on the silica surface ... is critical". Fitzgerald at column 5, lines 44-45.

Thus, Fitzgerald teaches away from and fails to suggest the high hydroxyl group density as is achieved by the present invention.

The reduction in hydroxyl density in Fitzgerald is achieved by reacting an untreated fumed silica with a reagent that can undergo a reaction with the hydroxyl groups of the fumed silica yielding a fumed silica with an organically modified surface. In contrast, the surface of the silica according to the present invention is not bearing organic compounds.

Mangold-944 discloses doped pyrogenically prepared oxides of metals and/or non-metals are prepared by adding an aerosol which contains an aqueous solution of a metal and/or non-metal to the gas mixture during the flame hydrolysis of vaporizable compounds of metals and/or non-metals. Mangold-944 at abstract.

Mangold-331 discloses pyrogenically prepared silica doped with silver or silver oxide is prepared by feeding an aerosol into a flame such as is used for the preparation of pyrogenic silica, mixing the aerosol homogeneously with gas mixture before the reaction, then allowing the aerosol/gas mixture to react in a flame. Mangold-331 at abstract.

Mangold-944 and Mangold-331 are silent on the Silane density, Fitzgerald discloses the opposite of the present invention, that is to reduce the silanol density.

The cited prior art fails to suggest the independent Claim 1 limitations of "silicon dioxide powder, produced by flame hydrolysis, and displaying a hydroxyl group density of 3 to 4.7 OH/nm^2, wherein the hydroxyl group density is determined by reaction of the silicon dioxide powder with lithium aluminum hydride according to the method of J. Mathias and G. Wannemacher in Journal of Colloid and Interface Science 125 (1988) 61; and the silicon dioxide powder is a doped silicon dioxide powder". Furthermore, there is no reasonable expectation that the cited prior art would have successfully led the skill artisan to such a doped silicon dioxide powder.

Thus, the prior art rejections should be withdrawn.

In view of the foregoing amendments and remarks, Applicants respectfully submit that the application is in condition for allowance. Applicants respectfully request favorable consideration and prompt allowance of the application.

Should the Examiner believe that anything further is necessary in order to place the application in even better condition for allowance, the Examiner is invited to contact Applicants' undersigned attorney at the telephone number listed below.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,
MAIER & NEUSTADT, P.C.
Norman F. Oblon

Corwin P. Umbach, Ph.D.
Registration No. 40,211

Customer Number
22850

Tel: (703) 413-3000
Fax: (703) 413 -2220
(OSMMN 08/07)